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WORKING PAPER

THE IMPACT OF FOOD UNCERTAINTY AND SCARCITY  
ON THE US AND THE INTERNATIONAL SYSTEM

[REDACTED]  
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NOTE: In keeping with the International Functional Staff's responsibility for the assessment of major global problems, consideration is being given to a systematic study of how the US and the international system are likely to be affected by the world food supply and demand situation over the next decade or so. This working paper contains a tentative look at some relevant issues, a provisional conceptual framework, and some preliminary hypotheses. The judgments expressed are solely those of the author. The paper is not for attribution or citation and does not represent an official CIA or OPR view. Comments are most welcome and may be addressed to the author at room 3E63, CIA Headquarters Building, [REDACTED]

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Overview

Doubts about the ability of world food supply (production plus carry-over stocks) to keep pace with demand (physiological needs of an expanding population plus desires born of affluence) have given rise to food uncertainty. The allocation and use of the world's agricultural resources, heretofore almost exclusively a function of economic and market forces, consequently has entered a process of politicization that would become particularly contentious in a period of actual food scarcity.

The US cannot avoid being affected by this process as the disposition of its agricultural bounty inevitably becomes both a domestic and an international political issue. As the world's preeminent food exporter the US seemingly stands to realize significant gains from increasing international dependence on its exportable surpluses. Two potential sources of international influences are:

- economic strength produced by income from foreign food sales,
- political leverage provided by discretionary allocation of food exports.

Assuming US policies conducive to the realization of these potentials, food-resultant economic strength might be the more serviceable source of international influence during food uncertainty, but food-derived political leverage could become paramount in a period of food scarcity.

The impact of food uncertainty and scarcity will pose challenges as well as opportunities. Food-related strength and leverage can help the US deal with disruptions to the international system, but there are limits to the influence they can furnish. How the US might use food-related strength or leverage is, moreover, likely to be greatly affected by the dynamics of internal conflict between political pragmatism and humanitarian inclinations.

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Whether, when, and to what extent world food production will significantly and persistently fall short of demand is unclear. The international political implications of this uncertainty already are being felt, however, and the potentially pervasive impact of food scarcity warrants anticipatory attention. The US seemingly stands to realize significant gains from increasing international dependence on its agricultural resources, but the politicization of food distribution will bring challenge as well as opportunity. Domestic political and economic preferences may have to be reconciled with new international realities. National self-interest and political pragmatism, moreover, are likely to conflict with moral ideals and humanitarian inclinations.

Prospects for Supply and Demand

Land, fertilizer, and known technology already are being employed at near optimum levels in the US, and only marginal gains in food production appear attainable within the next decade.

Improving application of agrotechnology promises to increase output significantly in the Soviet Union, but the potential for progress is most dramatic in the developing nations.

The wide gap in per acre yield between farms in the developed and developing countries can be narrowed by inputs of technology and fertilizer, and much land remains to be brought into production.

But there are considerable economic, political and cultural impediments to fulfillment of the physical possibilities. The high cost of energy and fertilizer, inefficient land tenure patterns, disincentives to production caused by policies aimed at keeping food prices down in the burgeoning cities, and reluctance by national leaderships (who tend to define modernization in terms of industrial development) to expend limited resources on agricultural infrastructure are examples of these kinds of constraints. There also are instances where poor agricultural practices followed in efforts to quickly increase output are going to have severely counterproductive consequences.

Technology and climate figure heavily in the outlook for supply. New food production techniques such as those involving hydroponics and single-cell proteins could be of great importance if their large scale use becomes both technically and economically feasible. A fundamental world climate change that impacted negatively on traditional food sources, however, might more than offset such technological gains. Climatologists hold widely varying opinions on the direction, pace, and permanence of climate change, and there is no consensus about the interaction of natural

and man-made causes. Most knowledgeable observers agree, though, that we would be unwise to count on a continuation of the climate of the recent past, which has, in the long view, been unusually stable and favorable for agriculture.

Yearly production, of course, is not the sole component of world food supply. Available carry-over stocks must also be tallied. Depleted grain stocks currently are being rebuilt in the US and elsewhere--even in India. The generally strong agricultural performance making this possible, however, has also helped dissipate an international sense of urgency about the future. Immediate production sufficiency tends to breed complacency about long-term trends, and prospects for the early establishment of an international grain reserve system (or even an international system of nationally-held reserves) now appear dim.

Supply will continue to vary from year to year, but aggregate world demand for food keeps rising. With population increasing at an unprecedentedly high rate from the largest base in human history there are some 80 million additional people to feed each year, mostly in the poorer developing countries. Young people who have yet to reach child bearing age provide a built in momentum that

will keep the populations of these countries expanding for decades after they achieve--if indeed they do achieve--replacement level fertility.

Demand is not merely a function of numbers of people and physiological requirements, it also involves human wants and tastes. As their disposable incomes rise, people tend to seek variety in their diets and to make them richer in protein, e.g., through increased consumption of meat. The availability and price of the food items people want regulates their ability to indulge these desires. The impact of affluence on demand, therefore, is dependent on supply, economic conditions generally, and on choices made by national leaders (especially those in charge of centrally planned economies).

#### Uncertainty and Scarcity

Whether, when, and to what extent food supply will fall short of demand cannot be forecast with precision. Yet it is clear that widespread doubt about maintenance of the precarious supply-demand balance has given rise to world food uncertainty, and this in itself has important international political ramifications.

World food uncertainty is a situation in which a significant number of nations, to varying degrees, cannot take for granted their ability to produce or procure enough food to meet--in the case of populous poorer countries--basic subsistence requirements, or--in the case of more affluent nations--desired nutritional standards. A period of food uncertainty may involve much malnutrition, some starvation, and even a few instances of famine. It may or may not be followed by actual food scarcity: that is, a period in which world food production regularly falls significantly short of demand, there are insufficient reserve stocks to fill the gap, and the consequences--for some at least--are correspondingly more severe.

What, then, might the advent of food uncertainty and the prospect of food scarcity mean for the US and the international system?

#### A World of Food Uncertainty

There are important differences in how nations perceive and respond to food uncertainty. Poorer food deficient countries are prone to view the world food "problem" as one of inequitable

distribution and consumption rather than shortage. The affluent nations' absorption of a disproportionate share of world resources thus is identified as the cause of the problem, and solutions are articulated more in terms of "distributive justice" than increased production.

The poorest and most populous food deficient nations, those whose ability to produce or procure enough food is most dubious in a period of uncertainty, are likely to become increasingly resentful toward those in the developed world--especially in the developed Western world--whom they blame for their plight. Colonial legacies of commercial crops, international encouragement of modernization through pursuit of comparative advantage and participation in the world market economy, and the easy availability--until quite recently--of surplus US grain on concessionary terms that discouraged domestic production are some of the factors cited in support of the contention that the poorer countries have been deceived and abused. To at least some in the developing world, therefore, the food situation is a manipulative device for keeping them in their place; advocacy of population control by developed nations is selfishly motivated; and pressure on food deficient developing



countries to increase agricultural productivity is a ploy to disrupt industrialization and modernization plans. The spread of these kinds of beliefs in a period of food uncertainty would impede cooperative international efforts to increase food supply.

Food uncertainty already is having some disruptive international consequences. It is, for example, helping to strain the international economic order as food deficient nations that export industrial raw materials begin to perceive an additional reason for pressing efforts to improve their terms of trade. Alleged inequities of the global grain trade are coming under fire from the poorest countries. They may agitate for price preferences or other arrangements to compensate for their disadvantageous position. Bitter controversy could arise, both within and among nations, over the morality of feeding grain to livestock while some people go hungry or starve.

Food uncertainty could also complicate the achievement of international agreement on global issues such as marine resource conservation and pollution abatement. Nations with immediate worries about feeding themselves are likely to be less concerned with the ecological effect of fishing or other food producing

activity even when the result is injury to their own long-run interests. Food deficient nations could also attempt to make their cooperation in various international endeavors contingent on assurances of adequate food supplies. International efforts to deal with food uncertainty might become a key intersection in North-South/East-West relations. The Soviets have tended to use international gatherings on food issues as opportunities to stoke the frustration and resentment of the poor and direct it against the West.

#### Uncertainty and the US

As the world's preeminent food exporter--and the major producer likely to be least affected by adverse climate change--the US seems assured of deriving some significant benefits from increased foreign dependence on its agricultural resources. A period of food uncertainty means a high and relatively steady demand for US exports, and income from foreign food sales produces economic strength. The extent to which this food-resultant economic strength is transformed into international influence will depend on whether other nations perceive the US to be using it in a way that enhances US ability to exercise military, economic, or political power.

The possession of plenty amidst uncertainty provides the US with another potential source of international influence: leverage derived from discretionary allocation of agricultural exports, i.e., the ability to decide to whom to sell or give food. The derivation and utility of this food-derived political leverage is not inevitable, but it should not be assumed that constraints imposed by mutual national dependencies and the interconnection of international issues preclude its employment. The importance of food-derived leverage will depend on the interplay of a number of complex considerations.

Fluctuating levels of food uncertainty will affect the utility of food-derived leverage. Preoccupation with food supply will vary from time to time and place to place. A good harvest or two in a particular nation or region will tend to ease concern about the future and decrease susceptibility to food-derived leverage, especially if some stockpiling is accomplished. Different degrees of dependence on US production will also play a role. Food-derived leverage stands to be most effective when applied to nations that are vulnerable, rather than merely sensitive, to an interruption in imports from the US. The distinction between vulnerability and sensitivity is conditioned by such factors as the use to which the imports are put

(e.g., human consumption or livestock feed), the nation's capacity to produce more, its wherewithal to purchase substitutes (provided they are available), and its ability to simply do without. Attitudes of national leaderships toward high prices, shortages, hunger, and popular discontent determine the degree to which imports from the US are considered essential, and hence the nation's relative susceptibility to food-derived leverage. It is important to recognize that for some nations malnutrition, starvation, and even some famine might be neither unusual nor particularly disruptive politically.

The effectiveness of food-derived leverage during food uncertainty will also depend on the kinds of attitudes or behaviors it seeks to induce, i.e., on the degree of conflict between the outcome sought by the US and the preferences of those upon whom the leverage is brought to bear. The things the US might want most to affect with food-derived leverage--e.g., political philosophies, development strategies, population policies, attitudes toward resource use and environmental protection--probably are those least amenable to such influence. Except perhaps for the poorest and most populous countries, needs for US food in a period of uncertainty are unlikely to be critical enough to make asymmetrical quid pro quos, i.e., long-term

non-reversible changes in basic national domestic or foreign policies, achievable with food-derived leverage. Attitudes or behavior on less fundamental issues, e.g., transitory policies or specific tactical disputes, should be more amenable to the use of food-derived leverage. In these kinds of cases, however, the objective might not always be worth the cost in resentment engendered among those to whom the leverage was applied.

The utility of food-derived leverage will also be affected by abilities of other nations to bring countervailing leverage to bear on the US through, for example, exploitation of US dependence on a particular import. Countervailing leverage might also arise from another nation's strategic location, political alignment, membership in the nuclear club, or status as a super or regional power. To the extent that the US covets stability in the international system and perceives upheaval as potentially inimical to its interests, the spectre of famine could itself give rise to countervailing leverage.

#### The US in a World of Food Scarcity

Movement from food uncertainty to an apparently interminable period of actual scarcity would increase the potential for US

ascendency. Income from foreign food sales would reflect rising real prices, with a concomitant jump in food-resultant economic strength and potential international influence. But there would be limits to this potential, since income from food sales would cease to produce a net increase in economic strength as rising food prices forced customers to curtail purchases of other US exports.

The utility of food-derived leverage would be greatly enhanced. Needs for imports from the US in a period of food scarcity would be increasingly permanent and essential. With heightened competition for available supplies and the exhaustion of alternative suppliers, food-derived leverage might be capable of affecting the basic national policies of a widening circle of nations.

Increased challenges and dangers would accompany these opportunities, however. Antipathy between rich and poor nations would intensify as disparities in wealth began to spell the difference between life and death, especially if the affluent continued to indulge their desires as well as meet their basic needs. The international economic order would be subjected to tremendous stress as food deficient countries struggled to increase their export earnings

in order to remain capable of paying for agricultural imports. If spiraling prices were to force more and more nations out of the bidding for available supplies, there would be mounting pressure for the replacement of market distribution by an "equitable" international allocation system.

Should anxiety give way to desperation the US might have to contend with international disruption caused by misguided attempts at climate control, the use of force, foraging populations, and perhaps even with nuclear or terrorist-style blackmail. It would take more than food-derived leverage to cope with problems of this order.

#### Implications for US Policy

The allocation and use of the world's agricultural resources, heretofore almost exclusively a function of economic and market forces, has with the advent of food uncertainty entered a process of politicization that would become particularly contentious in a period of food scarcity. The US cannot avoid being affected by this process as the disposition of its agricultural bounty inevitably becomes both a domestic and an international political issue. As

principal custodian of an object of intense international competition, moreover, the US could find its agricultural marketing system the target of manipulation and be caught in the middle of a potentially explosive dispute in which it would stand to make enemies no matter what course it chose.

It therefore seems essential for the US to understand the relationships among its agricultural resources, national interests, and foreign policy goals. It is especially important that these connections be viewed in the broad context of the domestic economy, the link between food production and energy consumption, and the long-term impact of production and export maximization on the environment and the ecological systems upon which food production depends.

The potential utility of food-derived leverage as a source of international influence is meaningless unless the US is willing to use such leverage as an instrument of its foreign policy and possesses the capability to do so. These matters transcend the political unpalatability of ad hoc export embargos; they involve fundamental US attitudes about agriculture, economics, morality, and foreign policy. Power to apportion available resources between domestic consumption, sale abroad, and foreign aid is, of course, presently



shared by the government, private institutions, and market forces. The same holds true for allocation among potential customers. Current long-term commitments and political relationships with traditional buyers help define the boundaries of flexibility.

The idea of having to consciously decide which nations to feed is not particularly attractive. In a period of prolonged uncertainty or actual scarcity, however, it would become increasingly apparent that discriminatory allocation is inevitable when demand exceeds supply, and that the international marketplace is a mechanism that allocates food only to those who can afford to pay for it. Popular pressure for a change in this state of affairs would likely be considerable. Thus, moral inclinations and the international political challenges posed by uncertainty and scarcity may both militate strongly against continued sharing of allocation decision making power with private and market forces. While the domestic political interplay that may ultimately lead to an increased government role must obviously remain beyond the scope of a study by this agency, it does seem likely that the international politicization of food distribution will sooner or later cause the US (perhaps, but not necessarily out of a desire to employ food-derived leverage) to extend and regularize government

control over the disposition of agricultural resources. The US would then have to make conscious allocative decisions, and (assuming any resulting disincentives to US producers did not significantly reduce supplies available for export) food-derived leverage would, sought or not, have become a reality.

#### Prospects for Strength and Leverage

For reasons mentioned earlier, however, food-derived leverage stands to be only marginally useful during food uncertainty, at least vis-a-vis the nations and issues the US might want most to influence. During uncertainty, moreover, the US may still lack extensive control over the allocation of its food exports. Food-resultant economic strength might be a more serviceable source of international influence, if US policies are conducive to this conversion. During food uncertainty, in other words, income from foreign food sales that helps make the US appear more powerful may be more significant than the choosing of customers.

In a period of food scarcity, on the other hand, the US assumedly would have secured more control over the disposition of its food exports, and the highly integrated societies of food deficient developed

countries might make them particularly susceptible to food-derived leverage. Rising income from foreign food sales, meanwhile, might no longer be producing a net increase in economic strength. Food-derived leverage could thus become the paramount source of food-related influence. The ability to decide to whom to sell and on what terms, would, in other words, become more important than the economic strength flowing from the sale.

Food-derived leverage would be useful, however, only so long as governments remained capable of making and enforcing decisions. If the impact of food scarcity were to be so disruptive as to cause the international system to descend into chaos, the very factors giving rise to food-derived leverage would render it futile.

#### A FINAL NOTE

Within the US, food uncertainty and scarcity could cause considerable conflict between prevailing conceptions of national self-interest and political pragmatism on the one hand, and moral ideals and humanitarian inclinations on the other. This dichotomy seems likely to permeate debate on issues such as the degree to which the US should press its unique advantage; the nations upon and purposes

for which food-derived leverage should be brought to bear; and to which nations and in what order and proportion food exports should be allocated. In so doing, it would heavily influence how the US might use its food-related strength and leverage.